

FORM PTO-1300 (Modified)
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

216096US6PCT

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/926541

INTERNATIONAL APPLICATION NO.

PCT/SE00/01304

INTERNATIONAL FILING DATE

20 June 2000

PRIORITY DATE CLAIMED

24 June 1999

TITLE OF INVENTION

DEVICE AND METHOD FOR FASTENING CABLES TO AN INDUSTRIAL ROBOT

APPLICANT(S) FOR DO/EO/US

SALOMONSSON Dan et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☐ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Request for Consideration of Documents Cited in International Search Report/Request for Priority

U.S. APPLICATION NO. (IF KNOWN) SEE 37 CFR 09/926541		INTERNATIONAL APPLICATION NO. PCT/SE00/01304		ATTORNEY'S DOCKET NUMBER 216096US6PCT	
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24. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :	CALCULATIONS PTO USE ONLY
<input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	\$1040.00
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	\$890.00
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	\$740.00
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)	\$710.00
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)	\$100.00
ENTER APPROPRIATE BASIC FEE AMOUNT =	\$1,040.00
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)). <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30	\$130.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	13 - 20 =	0	x \$18.00	\$0.00
Independent claims	2 - 3 =	0	x \$84.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>				\$0.00
TOTAL OF ABOVE CALCULATIONS =				\$1,170.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0.00
SUBTOTAL =				\$1,170.00
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30 +				\$0.00
TOTAL NATIONAL FEE =				\$1,170.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00
TOTAL FEES ENCLOSED =				\$1,170.00
				Amount to be: refunded \$
				charged \$

a. ☒ A check in the amount of **\$1,170.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.


c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **15-0030**. A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Surinder Sachar
Registration No. 34,423


22850

Surinder Sachar
SIGNATURE

Gregory J. Maier
NAME

25,599
REGISTRATION NUMBER

Nov. 16 2001
DATE

09/92654 7

Device and method for fastening cables to an industrial robot.

Technical field

The present invention relates to an industrial robot with compacted cable set
5 fastening.

Background art

Industrial robots comprise a manipulator with a control system where the manipulator comprises a robot arm. In industrial robots the power cable set is usually
10 arranged inside the robot arm for power supply to the tool itself, inside the robot arm. It is also known to arrange process cable sets for power supply to the tool itself, inside the robot arm. The qualifying term cable set here refers to one or multiple cable sets mentioned above. Furthermore the qualifying term can comprise spare circuits, for example to meet the different demands of clients. Each cable set is provided with connectors for connection to respective
15 power source.

The patent document US 5564312 shows an industrial robot in which the cable set coming up from the frame passes an opening in a star shaped holder, which keeps the cables apart to manage the rotation of the robot around an axle A. The star shaped holder also
20 protects against down-falling particles and parts. The star shaped holder distributes the individual cables and wires over the entire opening.

The patent document GB 2134074 shows an industrial robot with an installed cable set, the purpose of which is to decrease the wear on the cable set without compromising the
25 mobility of the robot. The document does not mention on how the cable set is to be replaced e.g. in case of cable breakdown or other damage to the cable set.

The patent document US 4715571 shows a device for holding individual cables in round holders 1. The device also comprises fastening means 53, which can each hold a
30 number of holders. The purpose is among other things to achieve a holding device of low weight to be used e.g. in aeroplanes.

Industrial robots are thus equipped with cable sets, which are drawn out and in through comparatively narrow spaces in the manipulator pieces. Problems arise when an old

cable set is to be removed and a new cable set is to be installed. When removing a cable set, the individual cables/wires in the set can get entangled with remaining cables/wires and pull them out or tear them apart. Or the new cable set gets stuck and risks being torn apart. Both situations lead to an undesired assembly work on the robot with expensive delays as a result thereof.

The ready-manufactured cable sets have relatively large connectors. Some of the connectors cannot pass through one or several openings because the available space in the openings is too small. The alternative is to partly dismantle the robot in order to install cable sets, which makes the operation of the robot more expensive.

With the problems mentioned above the time between the changing of cable sets is substantially lengthened. This leads to expensive stoppage, which makes the operation of the robot, and thereby also the manufacturing of a product, substantially more expensive.

Another kind of problem with robots is that dirt and waste material can penetrate to the interior of the manipulator through openings for the cable sets. This could also lead to unwanted stoppage, which makes the production more expensive. Furthermore, dirt inside the robot leads to greater wear and thereby shorter lifetime.

When manufacturing robots like the ones mentioned above a need for a robot arises, which enables a fast and simple fastening of ready-made cable sets with attached connectors. At the same time, dirt should be kept out from the interior of the robot. With some robot mountings there is also a need for a fastening, which also protects the interior of the robot from liquid penetrating through. The device for fastening cable sets should be of low weight, use the space with maximal efficiency, i.e. offer a compact fastening, allow for a quick assembly of cable sets and at the same time keep waste material and dirt out.

This requirement cannot be met by any of the devices shown in the cited documents.

Summary of the disclosed invention

When industrial robots are manufactured a manipulator is equipped with cable sets for operating the robot. The development of the power supply has the objective to create flexible systems both for robot manufacturers and for customers. In a flexible system the

robot manufacturer can produce a standard concept. The customer thereafter decides how the robot shall be equipped at delivery.

The object of the present invention is thus to achieve a robot comprising a device with which one in a simple and compact way fastens cable sets and at the same time enables the exchanging and supplementing of ready-made cable sets.

The inventive idea includes that the robot manufacturer can use cable sets ready-made by a subcontractor. Furthermore it includes that the user/customer himself also shall be able to supplement alternatively shift the operational equipment of the robot to make the robot usable for totally different assignments during its lifetime.

The solution according to the invention is a robot comprising a manipulator with a control system, which robot is provided with a device for fastening at least one cable set to the manipulator, where the cable set runs through one or more openings in the manipulator. The device comprises a holder, which fastens the individual cables longitudinally and laterally. The device can also comprise a lid with a shape compatible to the holder. When the holder and the lid are mounted together in/across the opening they cover, alternatively form, a tight seal. The holder and the lid respectively are detachably fixed along the corresponding section of the edge region of the opening.

The inventive idea includes the situation where a manipulator has so many cable sets, that the corresponding number of compatible holders together cover the opening. Additionally it includes the situation where one or several holders are arranged together without covering the opening and without arranging any lid arranged in the residual part of the opening.

To simplify the fastening of cable sets in the manipulator, the manipulator is provided with a pipe socket, which has an upper orifice of optional shape. Thereby an irregular opening in the manipulator can be transferred to an optional orifice shape, which fits the ready-made holders of the cable sets with pre-selected shape. Another advantage of a fixedly mounted pipe socket is that the cable set passes an opening, where the risk of wear and breaking against the rim of the opening has been substantially reduced.

The holder and the lid can be manufactured from different materials, e.g. rubber, polymer or metal.

The invention allows the fixating of existing cable sets in an opening in a robot so that they do not accompany a ready-made cable set being removed/installed and thereby being drawn through the opening. The holder fixes installed cable sets e.g. in connection with the rim of the opening. If the cable set installed, which is to be drawn through the opening, has connectors that are too large, the holder can be detached from the rim of the opening and be led to the side in order to leave room for the connectors. Then, only the separate cables in the cable set occupy space in the opening. When the connectors have passed through the opening, the holder is brought back and once again attached e.g. to the rim of the opening.

Brief description of the drawings

Henceforth reference is made to the attached figures for a better understanding of the present invention and its examples and embodiments, wherein:

Fig. 1 illustrates an industrial robot with a cable set installed in accordance with the present invention.

Fig. 2 illustrates one embodiment of the invention, where a pipe socket forms an opening with holder and lid.

Fig. 3 illustrates an enhanced detailed view of the device in fig. 2.

Detailed description of preferred embodiments

An industrial robot, comprising a manipulator with a control system, comprises a device 1 allowing attachment of a cable set 2 (fig.1). The cable set 2 is installed from a power source 3 up through the manipulator support 4 and further to the manipulator arm 5. The cable set 2 runs through the support 4 via an opening 6. In the preferred embodiment, a fixedly mounted pipe socket 7 with an upper rim 7a and an upper orifice 7b covers the opening 6 in the support 4. The cable set 2 thus runs through the opening 6 and the pipe socket 7 and out through the orifice 7b.

The cable set 2 in the example consists of three individual cables/wires 2a, 2b and 2c (fig. 2). The cables/wires run through cavities/openings 8 in a disc-shaped holder 9 and are thereby fixedly positioned at a distance from each other in a plane transverse to their longitudinal direction. The holder 9 is, along a section 10a of its outer edge 10, shaped to be

compatible with the upper rim 7a of the pipe socket. In the shown example, the upper rim 7a of the pipe socket is circular in shape and the holder 9 therefore has a correspondingly arch-shaped edge section 10a, which has the same radius of curvature as the upper rim 7a of the pipe socket. Along the edge of the holder's arch-shaped section 10a, a means of attachment is arranged in the form of a longitudinal curved collar 11. The holder 9 is attached to the orifice 7b of the pipe socket 7 by the collar 11 being hitched or forced onto the upper rim 7a of the pipe socket and the fixation is ensured with snap action.

The cable fastening means can also comprise a lid 12 with the same shape/outer contour as the upper rim 7a of the pipe socket. In analogy with the holder 9 the lid 12 has an attachment means 13 along the outer edge 14 in the form of a longitudinal arch-shaped collar 13a, where the collar 13a is hitched or forced onto the upper rim 7a of the pipe socket and the fixation is ensured with snap action. The lid 12 is used firstly to seal the upper rim 7a of the pipe socket before a cable set is installed in the robot and secondly, when a cable set 2 is already installed, to cover the part of the orifice 7b which is not yet covered by a holder 9.

The lid 12 can at the beginning have a shape, which covers the orifice 7b. By providing the lid 12 with one or more directions 15, the lid 12 can be divided into sections as more cable sets are installed. The lid 12 is divided into sections by removing/breaking off pieces along the directions 15, making the shape of the lid 12 compatible with the holder or holders 9 fastened to the opening. The holder 9 and the lid 12 are, when arranged next to each other, shaped to form a tight overlapping.

Alternative embodiments

Instead of hitching or forcing the holder onto the rim 7a of the pipe through the snap action of the collar 11, the collar 11 of the holder 9 can be hitched or forced onto the rim and thereafter fastened with a hose clamp 16 or the like. The same applies to the fastening of an optional lid 12.

The holder 9 can be of circular shape but have a spreading in the longitudinal direction of the cable set. In this way, the holder 9 giving the cable set 2 longitudinal support can make the guiding of the cable set steadier.

Claims

1. An industrial robot comprising a manipulator with a control system, whereby the manipulator comprises at least one device (1) for fastening at least one cable set (2), the cable set (2) being arranged to run through at least one opening (6) in the manipulator,

5 **characterized by** the device comprising a holder (9), through which the cable set (2) runs and by the holder (9) being detachably fixed along a section of an edge area of the opening (6).

2. A robot according to claim 1, **characterized by** the opening (6) being formed by a pipe socket (7), fixedly mounted on the manipulator (1).

10 3. A robot according to claim 1, **characterized by** the detachably fixed holder (9) having a fastening means in the form of a curved collar (11).

15 4. A robot according to claim 3, **characterized by** the holder (9) being fixed by snap action with the curved collar (11).

5. A robot according to claim 3, **characterized by** the holder (9) being fixed with a hose clamp (16).

20 6. A robot according to claim 1, **characterized by** the device (1) comprising a lid (12), which is detachably fixed in connection with the edge region of the opening (6).

25 7. A robot according to claim 1, **characterized by** the holder/holders (9) and lid/lids (12) having compatible shapes and by that they mounted together cover at least part of the opening (6).

8. A robot according to claim 1, **characterized by** the holder/holders (9) and lid (12) together covering and forming a tight seal of the opening (6).

30 9. A robot according to claim 6, **characterized by** the lid (12) being divided into sections (12a).

10. A robot according to claim 1, **characterized by** the lid (12) being divided into sections (12a) through at least one direction (15).

11. A process for fastening in an industrial robot, comprising a manipulator provided with a control system and at least one cable set (2), which runs through at least one opening (6) in the manipulator, **characterized by** the cable set (2) being arranged to run through a holder (9), and that the holder (9) is rendered detachably fixed in connection with a section of an edge area of the opening (6).

12. A process according to claim 11, **characterized by** that a lid (12) is shaped to be compatible with one or several holders (9), that holder (9) and lid (12) are fixed in the opening (6) in order to together be brought to cover at least part of the opening (6).

13. A process according to claim 12, **characterized by** that holder (9) and lid (12) together are rendered to cover the opening (6) tight-fittingly.

As long as the cable set is compactly arranged in the holder 9, it can be of optional shape. In the case of more holders, these should be of compatible shape. In the case of there being a lid 12, it can be shaped to cover all or part of the orifice 7b.

5 The outer edges of both the holder 9 and the lid 12 can be shaped to overlap when being arranged next to each other. They can also form a tight overlapping.

The individual cables can be arranged to revolve in the recesses/openings 8 of the holder.

10

The holder/holders alternatively can be arranged to revolve in the opening/orifice 7b.

The upper orifice 7b of the pipe socket 7 need not be of circular shape, but can be of either oval or angular shape.

15

The pipe socket 7 need not be curved but can be straight.

The fastening devices 11 and 13 neither need to be of the same shape nor be collars. The main point is that respective fastening device is easily detachable.

20

The lid can consist of several uniform or non-uniform but compatible units, which together form a lid of desired size and shape. They must also be compatible to one or several holders if they are to cover the opening together.

25

1/2

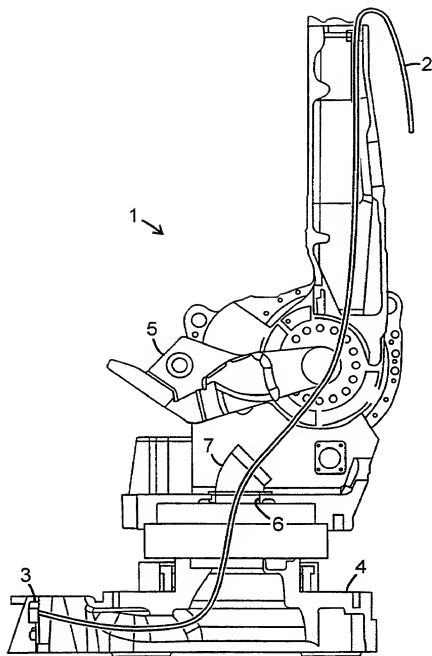


FIG.1

2/2

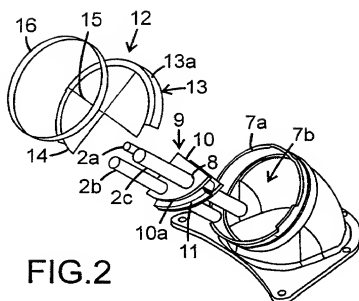


FIG. 2

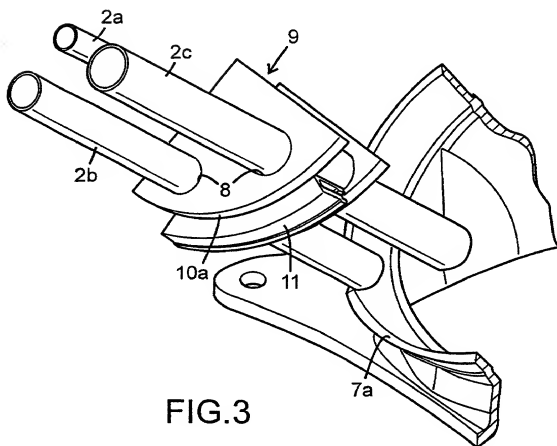


FIG. 3

FEB 2002

Declaration and Power of Attorney for Patent Application

Försäkran och Fullmakt avgiven i samband med ansökan om patentskydd

Swedish Language Declaration



Sednämnda nämnd uppfinnare förklarar jag att:

Min hemvist, postadress och medborgarskap är som nedan angivits.

Jag är övertygad om att jag är den ursprungliga, första enda uppfinnaren (om endast ett namn uppges nedan) eller en av de ursprungliga och första meduppinna (om flera namn anges nedan) av den uppfinning för vilken patent söks, benämnd:

vars patentbeskrivning härmed bifogas om inte

☐ här till bifogad

☐ ingavs den _____

som U.S. ansökningsnummer eller PCT
internationellt ansökningsnummer

och ändrades den _____

(eventuellt).

Jag förklarar härmed att jag har granskat och förstår innehållet i den ovannämnda beskrivningen och patentkrav med de eventuella ändringar som gjorts.

Jag är medveten om min skyldighet att uppges information av väsentlig betydelse för patentbarhet i enlighet med "Title 37, Code of Federal Regulations, § 1.56."

As a below named inventor, I hereby declare that:

My residence, mailing address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DEVICE AND METHOD FOR FASTENING CABLES TO
AN INDUSTRIAL ROBOT

the specification of which

☐ is attached hereto.

☒ was filed on November 16, 2001

as United States Application Number or PCT
International Application Number

09/926,541 and was amended on

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Swedish Language Declaration

Jag yrkar härmed prioritet enligt "Title 35, United States Code, § 119(a)-(d) or § 365(b)" för de(n) utländska ansöknin(ar) som angivits nedan och avser patent eller uppträffningscertifikat eller, under § 365(a) enligt ovan, för varje internationell PCT-ansökan som designeras åtminstone ytterligare ett land förutom U.S.A.; vidare har jag nedan identifierat, genom att korsa ruta, eventuella utländska patentansökningar, uppträffningscertifikat eller internationella PCT-ansökningar som har inlämningsdatum före det inlämningsdatum för ansökan från vilket prioritet yrkas.

Prior Foreign Application(s)
Tidigare ansöknin(ar) utomlands

9902409-3

(Number)
(Número)

Sweden

(Country)
(Pais)

Jag yrkar härmed på den förmon som i enlighet med "Title 35, United States Code, § 119(e)" tillkommer varje de Föränta Staternas hjälpannsökan som uppräknas nedan.

(Application No.)
(Ansökan,nr)

(Filing Date)
(ingivningsdag)

Jag yrkar härmed de förmåner som i enlighet med "Title 35, United States Code, § 120" tillkommer varje ansökan av U.S.A. eller, under § 365(c) enligt ovan, varje internationell PCT-ansökan som designeras U.S.A., och angivits nedan, och om innehållet i samtliga patentkrav i denna ansökan inte angivits i den tidigare ansökan av U.S.A. eller i internationell PCT-ansökan på det sätt som krävs enligt första paragrafen i "Title 35, United States Code § 112," är jag medveten om skyldigheten att uppgi information, som utgör material för patentbarhet enligt "Title 37, Code of Federal Regulations, § 1.55" och som blivit tillgänglig under tiden mellan den tidigare ansöknings inlämningsdatum och datum för denna ansökan inlämnande såsom nationell ansökan eller som PCT-ansökan.

PCT/SE00/01304

(Application No.)
(Ansökan,nr)

June 20, 2000

(Filing Date)
(ingivningsdag)

(Application No.)
(Ansökan,nr)

(Filing Date)
(ingivningsdag)

Vidare förklarar jag att dessa uppgifter, såvitt jag vet, är sanningsenliga och alla uttalanden om information och vetande förmodas vara sanningsenliga; och att dessa uppgifter lämnats i medvetande om att avsiktligt falska uppgifter och likande kan straffas med böter eller fängelse eller båda delarna enligt "Section 1001 of Title of the United States Code", och att sådana avsiktligt falska uppgifter kan äventyra giltigheten av ansöknin eller ett därav beviljat patent.

FULLMAKT: I egenskap av uppträffare befullmäktigat jag härmed följande advokat/er och/eller ombud att tala och svara i denna ansökan inför US Patent & Trademark Office: (Ange namn och registreringsnummer nedan).

I hereby claim foreign priority under Title 35, United States Code, § 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed
Prioritetsrätt
Krävs inte

24 June 1999

(Day/Month/Year Filed)
(Día/Mes/Año de presentación)

☒ ☐
Yes No
Sí No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

(Application No.)
(Ansökan,nr)

(Filing Date)
(ingivningsdag)

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status: Patented, Pending, Abandoned)

(ändrets status: patent meddelat, ej avgjort, avslagt)

(Status: Patented, Pending, Abandoned)

(ändrets status: patent meddelat, ej avgjort, avslagt)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

Swedish Language Declaration



022850

All korespondens i ärendet sands till:

Send Correspondence to:



022850

All tel. samtal i ärendet stalls till: (namn, tel. nr.)

Direct Telephone calls to: (name and telephone number)

(703) 413-3000

Nombre completo del único o primer inventor	Full name of sole or first inventor <u>Dan SALOMONSSON</u> <i>1-0</i>
Firma del inventor	Inventor's signature <i>Dan Salomonsson</i> <i>11/1-02</i>
Domicilio	Residence Kristiansborgsallen 5 A, S-722 19 <u>Vasteras</u> , Sweden
Nacionalidad	Citizenship Sweden <i>SEX</i>
Apartado postal	Mailing Address same as above

Nombre completo del segundo inventor conjunto, si lo hubiere	Full name of second joint inventor, if any <u>Daniel LUNDBACK</u> <i>2-0</i>
Firma del segundo inventor	Second inventor's signature <i>Daniel Lundback</i> <i>11/1-02</i>
Domicilio	Residence <u>Åmänningavägen 4B S-72482</u> Vasteras, Sweden
Nacionalidad	Citizenship Sweden <i>SEX</i>
Apartado postal	Mailing Address same as above